

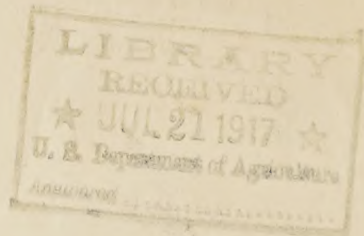
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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF ENTOMOLOGY  
WASHINGTON, D. C.



TRUCK CROP INSECT  
INVESTIGATIONS

NICOTINE SULPHATE FOR THE GARDEN.

Of methods of control for soft-bodied sucking insects such as aphides or plant-lice, nicotine sulphate has given the best results. Tobacco has also been used in recent years to a considerable extent for greenhouse fumigation, but most other compounds have been superseded by nicotine sulphate and nicotine fumigating papers.

A solution of nicotine sulphate, standardized to contain 40 per cent by weight of nicotine, abbreviated to "nicotine sulphate 40%," has given the best results. It has been tested practically wherever melons and other cucurbits are grown on a large scale, and especially in California, Illinois, Florida, Oklahoma, Texas, and in several other States, both by experts of the Bureau of Entomology and other practical workers. It was used on one occasion at Turlock, Calif., on 800 acres of watermelons and cantaloupes, with excellent results.

While we recommend nicotine sulphate 40% for the melon aphid, no claim is made that it is a "magic remedy" since careful application is required as in the case of all other insecticides.

Nicotine sulphate is used according to what is known as the 1-1,000 formula or 1 part of nicotine sulphate to 1,000 parts of water. To this mixture should be added sufficient soap or similar spray material to act as an adhesive or "stick-er" and as a "spreader." Common laundry soap is cheap, easily obtained and satisfactory for the purpose. The amount required may be estimated on the basis of 1 pound to each 25 gallons of the mixture.

For purposes of quick estimation, the following formula will be found to combine the ingredients in the proper proportions:

- Nicotine sulphate 40% ..... 3 ounces, fluid.
- Yellow laundry soap ..... 1 pound, avoirdupois.
- Water ..... 25 gallons.

The spray is most effectively applied by a power sprayer, since a much more even distribution is effected. Such a sprayer may be equipped with four lines of hose, each fitted with one or more wide-angle nozzles provided with elbows, and operated by one man to each row. For hill spraying a hand-sprayer, costing about \$1.25, is generally used.

It should be added that nicotine sulphate is designed especially for insects which derive their food by sucking. Arsenicals like arsenate of lead and Paris green are used for insects which derive their food by chewing or biting. This subject will be treated in another circular.

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NICOTINE SULPHATE FOR THE GARDEN.

Of methods of control for soft-bodied sucking insects such as aphides or plant-lice, nicotine sulphate has given the best results. Tobacco has also been used in recent years to a considerable extent for greenhouse fumigation, but most other compounds have been superseded by nicotine sulphate and nicotine fumigating

A solution of nicotine sulphate, standardized to contain 40 per cent by weight of nicotine, is prepared by dissolving 400 grams of nicotine sulphate in 600 parts of water. It has been tested particularly in various states and other countries and grown on a large scale, and especially in California, Illinois, Florida, Oklahoma, Texas, and in several other States, both by experts of the Bureau of Entomology and other practical workers. It was used on one occasion at Turlock, Calif., on 500 acres of strawberries and raspberries, with excellent results.

While an excellent nicotine sulphate 40X for the major crops, no claim is made that it is a "perfect remedy" under every condition in which it is used, and of all other insecticides.

Nicotine sulphate is now recommended to what is known as the 1-1,000 formula for a spray of nicotine sulphate to 1,000 parts of water. To this mixture should be added sufficient soap or other emulsifier to act as an adhesive or "stick-er" and as a "carrier." Good emulsifier may be cheaply obtained and either kerosene or turpentine. The amount required may be estimated on the basis of 1

The quantity of water required, the following formula will be found to be suitable for each 25 gallons of the mixture:  
Water..... 25 gallons  
Nicotine sulphate 40X..... 2 ounces, fluid  
Yellow laundry soap..... 1 pound, anhydrous

The spray is most effectively applied by a power sprayer, since a much more even distribution is effected. Both a sprayer may be equipped with four lines of hose, and fitted with one or more telescopic handles provided with nozzles, and operated by the use of a pump. For still spraying a hand-sprayer, consider about \$1.00, is usually used.

It should be noted that nicotine sulphate is highly toxic especially for insects which derive their food by sucking. It is also highly toxic to fish and birds. It is also highly toxic to insects which derive their food by chewing or biting. This subject will be covered in another circular.

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